AMENDMENTS TO THE CLAIMS

Claim 1. (Currently Amended) A temperature-independent arrayed waveguide grating, comprising at least an input waveguide, an input slab waveguide including an input side and an output side, said input side of said input slab waveguide receiving light from said input waveguide, a plurality of arrayed waveguides including an input side and an output side, said input side of said plurality of arranged waveguides being connected to said output side of said input slab waveguide, an output slab waveguide including an input side and an output side, said input side of said output slab waveguide being connected to said output side of said arrayed waveguides,

a plurality of output waveguides connected to said output side of said output slab waveguides;

a wedge-shaped groove formed in said arrayed waveguides; and

a photosensitive polymer filled in said groove, said [[said]] photosensitive polymer having a negative refractive index temperature coefficient;

wherein said photosensitive polymer disposed in said groove confines light incident to said groove in a vertical and a horizontal direction thereby preventing the light from spreading in said groove.

Claim 2. (Previously Presented) The temperature-independent arrayed waveguide grating in accordance with claim 1, wherein

a difference in a refractive index is provided in said photosensitive polymer using the photosensitivity, and optical waveguides are thereby formed in

said photosensitive polymer in a horizontal direction or in vertical and horizontal directions.

Claim 3. (Previously Presented) The temperature-independent arrayed waveguide grating in accordance with claim 1, wherein said photosensitive polymer filled in said groove has a refractive index higher than that of material of said arrayed waveguide grating.

Claim 4. (Original) The temperature-independent arrayed waveguide grating in accordance with claim 1, wherein width of each core of said arrayed waveguides is enlarged before and after said groove.

Claim 5. (Previously Presented) The temperature-independent arrayed waveguide grating in accordance with claim 1, wherein:

said photosensitive polymer filled in said groove has a refractive index higher than that of material of said arrayed waveguide grating; and

difference in a refractive index is provided in said photosensitive polymer using the photosensitivity and optical waveguides are thereby formed in said photosensitive polymer in a vertical direction or in vertical and horizontal directions.

Claim 6. (Previously Presented) The temperature-independent arrayed waveguide grating in accordance with claim 1, wherein:

said photosensitive polymer filled in said groove has a refractive index higher than that of material of said arrayed waveguide grating; and

width of each core of said arrayed waveguides is enlarged before and after said groove.

Claim 7. (New) The temperature-independent arrayed waveguide grading in accordance with claim 1 wherein said photosensitive polymer is selected from the group consisting of n-vinyl carbazole and methacrylic monomer, omnidix, metacrylic monomer and acrylic monomer, acrylic monomer and epoxy, acrylic monomer, or polysilane.